

Part 3 – Remarks

This Amendment and Response is responsive to the Office Action mailed August 28, 2006. A Petition for a Three Month Extension of Time and the fee therefor accompanies this Amendment and Response, thereby extending the time for response to February 28, 2007.

In the August 28 Office Action, claims 1-3, 5, 9, 17-19, 25, 53, 66-71, 73, 81, 82, 97 and 100 were rejected under 35 USC 103 as obvious from US patent 6,175,610 to Peter in view of US patent 5,599,159 to Daum; claims 8-10, 74 and 75 were rejected under 35 USC 103 as obvious from Peter and Daum in view of US patent 5,524,180 to Wang; claim 11 was rejected under 35 USC 103 as obvious from Peter, Daum and Wang in view of US patent 6,801,637 to Voronka; claims 12-16, 20-24, 72, 76-80 and 101 were rejected under 35 USC 103 as obvious from Peter, Daum, Wang and Veronica in view of US patent 6,710,770 to Tomasi; claims 26-33, 44, 49, 62-65, 84, 85, 94-96, 98, 102 and 108-111 are rejected under 35 USC 103 as obvious from Peter and Daum in view of US patent 6,847,336 to Lemelson; and claims 34-47, 50-52, 57-61, 83, 86-93, 99 and 103-107 were rejected under 35 USC 103 as obvious from Peter, Daum and Lemelson in view of US patent 6,603,464 to Rabin.

It is noted that claims 4, 6 and 7 were not specifically rejected in the August 28 office action, but those claims appear to have been dealt with in the explanation of the first obviousness rejection. It is therefore presumed that these claims were intended to be rejected on the grounds of the first obviousness rejection. However, the office action does not reject claims 54-56, and claims 54-56 do not appear to have been dealt with in any of the above rejections. Accordingly, it is presumed that claims 54-56 are not rejected.

Reconsideration of these rejections is respectfully requested, with respect to the pending claims 1-17, 19-25, 29, 34-45, 47, 52, 56-61, 66-81, 84-99, 103-108 and 112-140.

Claim Amendments and New Claims

The claims have been amended in the manner set forth above to correct minor discrepancies, to improve their form, to better define the invention, and to incorporate subject matter of certain canceled claims, as set forth above.

Claims 1 and 66 have been amended to recite "contact" interrogation with the image on the display surface. Contact interrogation is described in the specification at page 9, lines 11-16, page 17, lines 29-31 and more generally on pages 18-20. Contact interrogation was originally claimed in claims of 4 and 69, among others.

New claims 112-140 are similar to, or derive subject matter from, the original claims. Examples of the original claims which form a basis for the subject matter of the new claims are set forth below, although other claims may also form a basis for the subject matter of the new claims.

112: 2, 8	113:14, 15	114: 29, 32, 46	115: 34, 52, 86
116: 42	117: 37	118: 47	119: 52
120: 42	121: 37	122: 40	123: 39
124: 40-42	125: 34	126:11, 12	127: 10, 11
128: 12, 13	129: 38	130: 39	131: 40
132: 41	133: 42	134: 43	135: 34
136: 47	137: 34, 42	138: 11, 12	139: 74
140: 76			

No new matter has been added by the amendments or the new claims.

Comments about the Obviousness Rejections

The August 28 office action asserts six different obviousness rejections based on various combinations of references. All of the rejections make statements about what the references allegedly teach. However, none of the rejections appears to explain the differences between the claimed subject matter and the references, the proposed modification to the references necessary to arrive at the claimed subject matter or, most importantly, an explanation of why one of ordinary skill in the art would be motivated to make the proposed modification. The obviousness rejections fail to comply with MPEP 706.02(j).

In many of the statements concerning the alleged disclosure, the office action does not make clear which reference supposedly makes the alleged disclosure.

Due to the inadequate nature of these rejections, it is respectfully submitted that any further rejection of the claims should not be made final because the Applicant has not had an opportunity to respond to a proper rejection in the first instance.

Obviousness Rejections

Despite the undeterminable nature of the obviousness rejections, it is clear that the Examiner intended that the references be combined.

A valid obviousness rejection requires a suggestion or motivation in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or combine them in a manner which teaches the claimed subject matter. It is respectfully submitted that there is no motivation or suggestion for such a combination with respect to the amended claims now pending.

Independent claims 1 and 66, and their dependent claims, recite in the manner set forth, interrogation of contact interaction with the control panel image. That contact interaction is the basis for the interaction signal supplied to control the surgical equipment. The concept of interrogating contact interaction for the virtual control of surgical equipment is not described or suggested in the references cited.

The Peter patent does not interrogate contact interaction with the control panel image. Peter interrogates the position or movement of the surgeon's hand or finger above the image. So long as the hand or finger is at a specific position above the image, and remains there for a specific amount of time, Peter recognizes this as valid control input. There are finger troughs or recesses and projections or raised areas on the surface upon which Peter projects the image, but these raised areas and recesses are for the practitioner's convenience in registering or aligning his/her finger with the appropriate control area of the image so its presence at the appropriate location will be correctly recognized. See column 6, lines 9-13. However, Peter does not interrogate contact with the surface upon which the image is located.

The inability of Peter to interrogate contact with the control panel image is explained in column 4, lines 1-15. Peter analogizes the situation to positioning the cursor

with a mouse of a computer, and then clicking the mouse by leaving the cursor at the position for a predetermined time. In other words, Peter's activity is entirely two-dimensional, in the nature of casting a shadow, and not three-dimensional as is involved in interrogating contact with the control panel image surface as is recited more specifically in the pending claims.

The Daum reference contributes nothing of significance to Peter's disclosure. The Daum reference describes a robot-like arm which manipulates itself in response to movements of a human hand which controls the robot-like arm device. The August 28 office action states that Daum describes equipment and procedure whose purpose is "working in inaccessible areas and cavities." Nothing about the present invention relates to working in inaccessible areas or cavities. Therefore, the Daum reference can contribute nothing meaningful over and above Peter, and Peter fails to disclose or suggest the concept of contact interrogation.

Independent claims 52 and 99, recite in the manner set forth, the use of a tag from which information is read in connection with interrogating interaction of the surgeon with the control device image. The information from the tag and the interrogated interaction with the control device image are both required to control the surgical equipment. Use of the tag and the information obtained from that tag assures a level of reliability beyond that available from interrogating interaction with the image, and assures greater reliability when controlling when controlling the surgical equipment. None of the cited references teach or suggest the concept of using an information tag, information read from that tag and interrogation of interaction with a virtual control device image -- to control surgical equipment.

The Voronka reference has apparently been cited with respect to tags. The Veronica reference describes optical markers that are attached to an individual in order to track the movement of various parts of the body. Veronica's optical markers appear to be reflectors or light sources. Veronica's markers do not contain information which is read and used in conjunction with a virtual control device image for controlling surgical equipment.

The significance of contact interrogation of the control panel image, and the significance of using the information from the tags is that a very reliable indication of a control action is obtained. The holographic control system described in the application at page 3, line 12, and the shadow recognition system described in Peter, are subject to unintended operation if someone accidentally moves his/her hand through the holographic image or moves his/her hand or some object above the control panel to create a shadow. Contact interrogation and correlating the information read from the information tag are improvements which enhance the reliability obtained from interacting with a virtual control device panel. The improvements of the present invention result in similar reliability to that achieved from pushing a button or moving a switch. Such reliability represents a very desirable improvement in virtual control systems such as those used for controlling critical equipment such as surgical equipment.

Because contact interrogation and use of information read from an information tag establish assist in establishing a reliable basis for it interrogating interaction with a virtual control device image is a concept which is not disclosed or suggested in the references cited in the August 28 office action, it is believed that all pending claims are patentable.

The significant advantages and improvements available from the claimed invention are described in the application at page 9, line 16 to page 10, line 6; page 11, line 15 to page 12, line 23; and page 25, line 24 to page 26, line 13; among others – all taken in relation to the background described at page 2, line 3 to page 5, line 6.

Specifically with respect to the first rejection based on Peter and Daum, Peter does not disclose or suggest contact interrogation and Daum does not contribute anything beyond Peter. Combining the references does not overcome their deficiency in disclosure, suggestion or motivation.

With respect to the second rejection based on Peter and Daum in view of Wang nothing in any of these references suggests replacing the physical foot switch device disclosed in Wang with an image as described in the application. Nothing in these three references suggests their combination. Even if the references were to be combined as proposed in the August 28 office action, the combination would still be deficient with respect to the claimed subject matter.

With respect to the third rejection based on Peter, Daum, Wang and Voronka, none of the references teach or suggest using information read from tags to establish reliable interaction with a virtual control panel image. Nothing in these references, which are unrelated to one another, teaches or suggests their combination in the manner proposed in the August 28 office action. Indeed, layering multiple unrelated references together in an obviousness rejection indicates that impermissible hindsight gained from the applicant's own disclosure was used in formulating the rejection. The necessity of layering the multiple unrelated references also demonstrates the nonobviousness of the claimed subject matter.

With respect to the fourth rejection based on Peter, Daum, Wang, Voronka and Tomasi, the Tomasi reference relates to a virtual keyboard for a computer. Nothing in Tomasi suggests or teaches its combination with respect to controlling surgical equipment in an operating room by use of a virtual control device panel. The combination of the five references is as a result of hindsight gained from the applicant's own disclosure, since nothing in those five references teaches or suggests their combination.

With respect to the fifth rejection based on Peter, Daum and Lemelson, Lemelson does relate to displays used in conjunction with surgical equipment. However the claims which relate to displays are distinguishable in regard to the lack of disclosure or lack of suggestion in Lemelson of the information presented, and/or of the control functionality achieved by the control panel image, and/or their dependency on other claims which appear to be patentable apart from Lemelson.

With respect to the sixth rejection based on Peter, Daum, Lemelson and Rabin, Rabin relates to scanning information on a paper form, not using information to control surgical equipment, and more particularly, Rabin does not relate to interrogating interaction with a virtual control device panel for the purpose of controlling surgical equipment. Other than for use with a medical form, nothing in Rabin is relevant to controlling surgical equipment. Again, the rejection has been formulated based on hindsight since none of the references suggest the combination of subject matter claimed.

Conclusion

The amendments and remarks demonstrate the patentability of the pending claims, which are not obvious from the references cited. Accordingly, it is believed that all pending claims should be in condition for allowance. Allowance is respectfully requested. The Examiner is requested to contact the undersigned by telephone to discuss any issues which may inhibit the immediate allowance of the claims.

Respectfully submitted,

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By: 

John R. Ley
Registration No. 27,453
ATTORNEY FOR APPLICANT

JOHN R. LEY, LLC
5299 DTC Boulevard, Suite 610
Greenwood Village, CO 80111-3321
Telephone: (303) 740-9000
Facsimile: (303) 740-9042